

7-21-04

AF/3729
ITWAttorney's Docket No. 67,200-262

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Hsu, et al

Group Art Unit: 3729

Serial No.: 09/ 588,788

Examiner: Anthony d. Tugbang

Filed: June 6, 2000

For: Planar Spiral Inductor Structure Having Enhanced Q Value

Commissioner for Patents

Alexandria, VA 22313-1450

TRANSMITTAL OF **REVISED** APPEAL BRIEF (PATENT APPLICATION-37 CFR 192)

1. Transmitted herewith, in triplicate, is the **REVISED** APPEAL BRIEF in this application, with respect to the Notice of Non-Compliance dated June 22, 2004.

2. STATUS OF APPLICANT

This application is on behalf of:

☒ other than a small entity.
☐ a small entity.

A verified statement:

☐ is attached.
☐ was already filed.

3. FEE FOR FILING **REVISED** APPEAL BRIEF

Pursuant to 37 CFR 1.17(f), the fee for filing the Appeal Brief is:

☐ small entity \$165.00
☐ other than a small entity \$330.00
☒ was already paid

Appeal Brief fee due: \$ 0

Certificate of Mailing

I hereby certify that this correspondence is, on the date shown below, being:

Mailing

X deposited with the U.S. Postal Service
with sufficient postage as Express Mail
Label No. EV 525 156 532US
in an envelope addressed to Mail Stop: Appeal,
Commissioner for Patents, P.O. Box 1450,
Alexandria, VA 22313-1450.

Dated: July 19, 2004
Kathy Dixon

(Transmittal of Appeal Brief - page 1 of 3)

4. EXTENSION OF TERM

NOTE: The time periods set forth in 37 CFR 1.192(a) are subject to the provision of 37 CFR 1.136 for patent applications. 37 CFR 1.191(d). See also Notice of November 5, 1985 (1060 O.G. 27).

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136 apply:

(complete (a) or (b), as applicable)

- (a) XX Applicant petitions for an extension of time under 37 CFR 1.136
(fees: 37 CFR 1.17(a)-(d) for the total number of months checked below:

	Extension (months)	Fee for other than small entity	Fee for small entity
<input type="checkbox"/>	one month	\$ 110.00	\$ 55.00
<input type="checkbox"/>	two months	\$ 420.00	\$210.00
<input type="checkbox"/>	three months	\$ 950.00	\$475.00
<input type="checkbox"/>	four months	\$1,480.00	\$740.00

Fee: \$ _____

If an additional extension of time is required, please consider this a petition therefor.

(check and complete the next item, if applicable)

- ☐ An extension for _____ months has already been secured, and the fee paid therefor of \$ _____ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request: \$ _____

or

- (b) ☐ Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

5. TOTAL FEE DUE

The total fee due is:

X was already paid
Appeal Brief Fee: \$ _____
Extension fee (if any) \$ _____

TOTAL FEE DUE: \$ _____

6. FEE PAYMENT

_____ Attached is a check in the sum of \$ 0
_____ Attached is a Credit Card Payment Form in the amount of \$ 0
A duplicate of this transmittal is attached.

7. FEE DEFICIENCY

NOTE: If there is a fee deficiency and there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum six-month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays are encountered in returning the papers to the PTO Finance Branch in order to apply these charges prior to action on the cases. Authorization to charge the deposit account for any fee deficiency should be checked. See the Notice of April 7, 1986, 1065 O.G. 31-33.

 X If any additional extension and/or fee is required, this is a request therefor and to charge Account No. 50-0484 .

And/Or

 X If any additional fee for claims is required, please charge Account No. 50-0484 .

A handwritten signature in black ink, consisting of a large, rounded 'R' followed by a series of horizontal strokes, positioned above a solid horizontal line.

Signature of Attorney

Registration No. 31,311

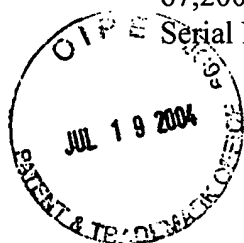
Telephone: (248) 540-4040

Randy W. Tung

Tung & Associates
838 W. Long Lake Road, Ste. 120
Bloomfield Hills, Michigan 48302

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Serial No. 09/588,788



BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

REVISED APPEAL BRIEF

TO: Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

FROM: Tung & Associates
838 West Long Lake Road - Suite 120
Bloomfield Hills, MI 48302

DATE: 28 June 2004

REF: Appellant : Hsu et al Filing Date : 6 June 2000
Serial No.. : 09/588,788 Att'y No. : 67,200-262; TSMC 99-545
Art Unit : 3729 Examiner : Anthony D. Tugbang
Title : Planar Spiral Inductor Structure Having Enhanced Q Value

EXPRESS MAIL CERTIFICATE

Express Mail label Number EV 525 156 532 US
Date of Deposit JUL 19 2004

I hereby certify that this paper in triplicate and a credit card payment form in the amount of \$330.00 (required filing fee) are being deposited with the United States Postal Service via Express Mail on the date indicated above and is addressed to: Commissioner for Patents, Alexandria, VA 22313-1450


Kathy Dixon

Sir:

In response to a notification of non-compliance with 37 C.F.R. 1.192(c) mailed 22 June 2004, please accept this revised appeal brief. This revised appeal brief incorporates revisions from an amendment and response filed simultaneously with the original appeal brief filed 16 March 2004. The revisions were not otherwise reflected in the original appeal brief filed 16 March 2004.

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REVISED APPEAL BRIEF

Sir:

In response to rejection of the claims in the above referenced application for United States Patent in an office action mailed 31 October 2003 and made FINAL, appellant filed a notice of appeal on 20 January 2004. In accord with appellant's notice of appeal, appellant filed an appeal brief and an accompanying amendment and response on 16 March 2004. In a notice of non-compliance with 37 C.F.R. 1.192(c) mailed 22 June 2004, the Examiner indicated several items of non-compliance with appellant's appeal brief that derive from entry of appellant's accompanying amendment and response. This revised appeal brief addresses those non-compliance items. No oral argument is requested.

1. Real Party in Interest

The real party in interest for this application is the assignee:

Taiwan Semiconductor Manufacturing Co., Ltd.
121 Park Avenue, No. 3
Science Based Industrial Park
Hsin-Chu, Taiwan, Republic of China

An assignment has been recorded for this United States Patent application.

2. Related Appeals and Interferences

There are no related appeals or interferences for this United States Patent application.

3. Status of the Claims

Claims 1, 4-8 and 16 are pending in this application. Claims 9-15 have been canceled incident to a restriction requirement. Claims 2-3 are canceled for other reasons. Claims 1, 4-6, 8 and 16 are finally rejected under 35 U.S.C. § 102(b). Claim 7 is finally rejected under 35 U.S.C. § 103(a). No claims are allowed or objected to. Appeal is taken for claims 1, 4-8 and 16.

4. Status of the Amendments

An amendment and response, filed 19 December 2003, was submitted in response to the office action made FINAL, in order to overcome the Examiner's rejections of the claims pending within this application. In an advisory action mailed on 7 January 2004, the Examiner indicated that appellant's response was considered but did not place appellant's application in condition for allowance. Appellant's proposed amendments were not entered since they: (1) raised new issues; and (2) did not materially reduce or simplify the issues for appeal.

Appellant filed an additional amendment and response with appellant's appeal brief on 16 March 2004 in accord with MPEP 1207. In a notification of non-compliance with 37 C.F.R. 1.192(c) mailed on 22 June 2004, the Examiner indicated that appellant's additional amendment and response was entered and made of record. In an advisory action mailed on 25 June 2004, the Examiner also indicated that appellant's additional amendment and response would be entered. Appellant's additional amendment: (1) amended appellant's claim 1 to address objections thereto; and (2) canceled appellant's claim 2 in light of the Examiner's citation and discussion of prior art. Appellant assumes that both of the above two items within appellant's additional amendment were entered since the Examiner has not indicated otherwise.

5. Summary of the Invention

The invention provides a method for fabricating a microelectronic inductor structure within a microelectronic fabrication, as well as the microelectronic inductor structure fabricated within the microelectronic fabrication while employing the method. The microelectronic inductor structure is fabricated with optimal properties, as characterized by an enhanced Q value of the microelectronic inductor structure. (page 6, first paragraph)

The invention realizes the foregoing object by employing when fabricating a planar spiral inductor structure in accord with the present invention a spirally patterned conductor layer for forming the planar spiral inductor. A successive series of spirals within the spirally patterned conductor layer is formed with a variation in at least one of: (1) a series of linewidths of the successive series of spirals; and (2) a series of spacings separating the successive series of spirals. (page 6, first paragraph)

The invention is claimed in two levels of scope that provide two separate methods for fabricating an inductor structure, including: (1) independent method claim 1 and dependent limitations thereupon (claims 5-8 and 16); and (2) independent method claim 4.

Independent claim 1 is read on the specification and drawings as follows:

1. (amended) A method for fabricating an inductor structure comprising:

providing a substrate 10; (Fig. 1, Fig. 2; page 9, second full paragraph and page 12, second full paragraph)

forming over the substrate 10 a planar spiral conductor layer 12 comprising a single spiral to form a planar spiral inductor comprising the single spiral, wherein a successive series of

spirals 12a/12b/12c/12d/12d''12c''12b''/12a'' within the planar spiral conductor layer 12 comprising the single spiral is formed with a continuous variation in at least one of:

a series of linewidths LW1/LW2/LW3/LW4 of the successive series of spirals;

and

a series of spacings separating the successive series of spirals. (Fig. 1; Fig. 2; page 9, second full paragraph to page 11, first partial paragraph; page 12, second full paragraph)

6. Issues

I. Whether claims 1, 4-6, 8 and 16 may properly be rejected under 35 U.S.C. § 102(b) as being anticipated by Romankiw et al. (U.S. Patent No. 4,295,173; hereinafter "Roamankiw").

II. Whether claim 7 may properly be rejected under 35 U.S.C. § 103(a) as being unpatentable over Romankiw in view of Ohmura et al. (U.S. Patent No. 4,392,013).

7. Grouping of Claims

Claims 1, 5-8 and 16 are directed towards a first claimed embodiment of the invention.

Claim 4 is directed towards a second claimed embodiment of the invention.

The claims stand or fall together within their respective groups.

8. Argument

I. Claims 1, 4-6, 8 and 16 may not properly be rejected under 35 U.S.C. § 102(b) as being anticipated by Romankiw.

a. Romankiw Subject Matter

Romankiw at Fig. 1B teaches a planar spiral inductor structure comprising a series of spirals apparently having a narrower linewidth closer to a medium M than further removed from the medium M.

b. The Examiner's Assertions

Page 2, next to last paragraph of the office action made FINAL, the Examiner asserts that Romankiw at Fig. 1B teaches a single spiral planar spiral conductor layer 10a/b/c/d/e/f/g/h that forms a single spiral planar inductor, wherein a series of successive spirals formed within the planar spiral conductor layer 10a/b/c/d/e/f/g/h is formed with a continuous variation of a series of linewidths of the successive series of spirals, in accord with appellant's claim 1 and claim 4, clauses 3.

c. Appellant's Response

In response, appellant asserts that Romankiw's planar spiral conductor layer 10a-10h as illustrated in Fig. 1B is not formed with a continuous variation of a series of linewidths of a successive series of spirals therein in accord with appellant's claims 1 and 4, clauses 3. Rather, Romankiw's planar spiral conductor layer 10a-10h comprises a successive series of spirals apparently having within each spiral within the successive series a uniformly wider linewidth for a subgroup of spiral portions further removed from a medium M and a uniformly narrower linewidth for a subgroup of spiral portions closer to the medium M. Thus, Romankiw at Fig. 1B clearly illustrates a planar spiral inductor structure having a discontinuous variation of a series of

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linewidths of a successive series of spirals therein, rather than a continuous variation of the same as is required within appellant's invention

Thus, since each and every limitation within appellant's invention as disclosed and claimed within claims 1 and 4 is not disclosed within Romankiw with respect to a planar spiral conductor layer formed with a continuous variation of a series of linewidths of a successive series of spirals therein, appellant asserts that claims 1 and 4 may not properly be rejected under 35 U.S.C. § 102(b) as being anticipated by Romankiw. Since all remaining claims within the foregoing rejections are dependent upon claim 1 and carry all of the limitations of claim 1, appellant additionally asserts that those remaining claims may also not properly be rejected under 35 U.S.C. § 102(b) as being anticipated by Romankiw.

As an additional and independent basis for patentability of claim 1, appellant notes that Romankiw at Fig. 1B teaches a pair of planar spiral conductor layers 10a/c/e/g and 10b/d/f/h rather than a planar spiral conductor layer formed as a single spiral in accord with claim 1, clause 2.

In light of the foregoing responses, appellant respectfully requests that the Examiner's rejections of claims 1, 4-6, 8 and 16 under 35 U.S.C. § 102(b) as being anticipated by Romankiw be reversed.

II. Claim 7 may not properly be rejected under 35 U.S.C. § 103(a) as being unpatentable over Romankiw in view of Ohmura.

a. Ohmura Subject Matter

Ohmura (abstract) teaches a fine patterning of a thick film conductor layer.

b. The Examiner's Assertions

At page 4, paragraph 2 of the office action made FINAL, the Examiner cites Ohmura as teaching linewidths of spiral conductors in a range of 7-10 microns or 34.9-190 microns. Such linewidths are needed to properly reject appellant's claim 7, but not otherwise taught within Romankiw.

The Examiner rationalizes suggestion or motivation for modification or combination of Romankiw with Ohmura such as "to positively form spiral conductors free from short circuiting and with high reliability."

c. Appellant's Response

In response, appellant notes that the foregoing ranges that the Examiner cites as linewidths for patterned conductor layers, Ohmura in fact actually teaches (abstract) as thicknesses of patterned conductor layers. Thus, Ohmura does not lend to Romankiw that which is absent within Romankiw and needed to reject appellant's claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Romankiw in view of Ohmura. For this reason, appellant asserts that claim 7 may not properly be rejected under 35 U.S.C. § 103(a) as being unpatentable over Romankiw in view of Ohmura.

As a separate basis of patentability of claim 7, appellant predicates patentability of claim 7 upon claim 1.

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In light of the foregoing responses, appellant respectfully requests that the Examiner's rejection of claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Romankiw in view of Ohmura be reversed.

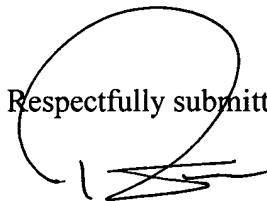
9. Summary

Appellant's invention as disclosed and claimed within claim 1 and claim 4 is directed towards a method for fabricating an inductor structure. The method employs a planar spiral conductor layer to form a planar spiral inductor, wherein a successive series of spirals within the planar spiral conductor layer is formed with a continuous variation in at least one of: (1) a series of linewidths of the successive series of spirals; and (2) a series of spacings separating the successive series of spirals. Absent from the prior art of record employed in rejecting appellant's claims to appellant's invention is a disclosure of each and every limitation within appellant's claimed invention.

10. Conclusion

Appellant requests that the Board of Patent Appeals and Interferences reverse the Examiner's action in rejecting the claims within this application within the office action made FINAL. Allowance of all claims remaining within this application, in accord with the appended copy of the claims, is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Randy W. Tung', is written over a large, loopy circular mark.

Randy W. Tung (Reg. No. 31,311)

Tung & Associates
838 West Long Lake Road - Suite 120
Bloomfield Hills, MI 48302
248-540-4040

APPENDIX
COMPLETE COPY OF THE CLAIMS

1. (previously presented) A method for fabricating an inductor structure comprising:

providing a substrate;

forming over the substrate a planar spiral conductor layer comprising a single spiral to form a planar spiral inductor comprising the single spiral, wherein a successive series of spirals within the planar spiral conductor layer comprising the single spiral is formed with a continuous variation in at least one of:

a series of linewidths of the successive series of spirals; and

a series of spacings separating the successive series of spirals.

2. – 3. (canceled)

4. (previously presented) A method for fabricating an inductor structure comprising:

providing a substrate;

forming over the substrate a planar spiral conductor layer to form a planar spiral inductor, wherein a successive series of spirals within the planar spiral conductor layer is formed with a continuous variation in at least one of:

a series of linewidths of the successive series of spirals; and

a series of spacings separating the successive series of spirals, wherein the successive series of spirals is formed in a shape selected from the group consisting of a triangle, a square, a rectangle, a higher order polygon, a uniform ellipse and a circle.

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5. (original) The method of claim 1 wherein the planar spiral conductor layer is formed of a conductor material selected from the group consisting of non-magnetic metal, non-magnetic metal alloy, magnetic metal, magnetic metal alloy, doped polysilicon and polycide conductor materials, and laminates thereof.

6. (original) The method of claim 1 wherein the variation in the series of linewidths of the successive series of spirals is an increasing progression of linewidth from a first spiral which defines the center of the planar spiral inductor having a comparatively narrow linewidth to a final spiral which defines the perimeter of the planar spiral inductor having a comparatively wide linewidth.

7. (original) The method of claim 6 wherein the comparatively narrow linewidth is from about 7 to about 10 microns and the comparatively wide line width is from about 17 to about 21 microns.

8. (original) The method of claim 1 wherein the successive series of spirals comprises from about 1 to about 8 spirals.

9. - 15. (canceled)

16. (previously presented) The method of claim 1 wherein the continuous variation is a progressively increasing or decreasing continuous variation.